

REMARKS

Claims 6-8, 11-28 are pending. Claims 6, 11 and 28 are independent.

Claims 1-5, 9 and 10 are cancelled.

Claims 3-5, 11, 20 and 21 stand rejected under 35 U.S.C. 102(e) as being anticipated by Kitai et al. (7,133,009). Claims 6-8, 12-19 and 22-28 stand rejected under 35 U.S.C. 103 as being unpatentable over Kitai in view of Graves (4,554,539). Dependent claims 9-10 stand rejected under 35 U.S.C. 103 as being unpatentable over Kitai in view of Kasai (7,012,597).

Claims 3-5, 9 and 10 have been cancelled. Therefore, the rejections of these claims under 35 U.S.C. 102 and 103 are deemed moot.

The rejections of the other claims are respectfully traversed for the following reasons.

REJECTIONS UNDER 35 U.S.C. 102

Independent claim 11 recites a display device of the active matrix drive type comprising a display panel having a plurality of pixels arranged in the form of a matrix, each of the pixels of the display panel having a display element luminescent when supplied with electric power, and a control circuit for controlling the luminescence period of the display element within 1 frame period in accordance with data voltage to be supplied from outside, the display device being characterized in that the control circuit of each pixel of the display panel comprises a first control element for starting to energize the display element and a second control element for deenergizing the display element.

The claim specifies that the first control element is provided on and connected in series with a power supply line extending from a power source for supplying the electric power to the display element, is turned on when starting to energize the display element and starts to energize

the display element, and the second control element is turned on when deenergizing the display element and turns off the first control element to thereby deenergize the display element.

In previous response, Applicant argued that Kikai does not disclose that the switching medium 34 includes the first control element provided on and connected in series with a power supply line extending from a power source for supplying the electric power to the display element, turned on when starting to energize the display element and starts to energize the display element, and the second control element turned on when deenergizing the display element and turns off the first control element to thereby deenergize the display element, as claim 11 requires.

In response, the Examiner contends that the power supply means is connected (sic) the array of matrix for providing power to each capacitively switchable electroluminescent pixel, and the switching medium 34 is incorporated within each pixel.

It is noted that the Examiner relies upon the following phrase in col. 5, lines 31-34:

"the power supply means connected said array of matrix addressed capacitively switchable electroluminescent pixels (sic) for providing power to each capacitively switchable electroluminescent pixel."

First, it is respectfully submitted that this phrase contains multiple grammatical errors that make it impossible to understand its meaning. It appears that this phrase is intended to indicate that the power supply means are connected to the array of pixels for providing power to them.

Accordingly, the reference does not disclose that the first control element (for starting to energize the display element) is provided on and connected in series with a power supply line extending from a power source for supplying the electric power to the display element, as claim 11 requires.

Anticipation, under 35 U.S.C. § 102, requires that each element of a claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983); *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1920 (Fed. Cir. 1989) *cert. denied*, 110 S.Ct. 154 (1989).

It is noted that the Examiner considers the dielectric switching medium 34 (which is incorporated into each pixel element, see col. 6, lines 51-53) to correspond to the claimed first control element. The reference discloses that the power supply means is connected to the array of pixels. However, Kitai does not disclose that each pixel element is connected in series with a power supply line extending from a power source for supplying the electric power to the display element.

Accordingly, the reference does not expressly disclose the specific arrangement recited in claim 11.

In the event the Examiner relied upon inherency without expressly indicating such reliance, the Examiner should be aware that inherency requires certainty, not speculation. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *In re King*, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983); *In re Oelrich*, 666 F.2d 578, 212 USPQ 323 (CCPA 1981); *In re Wilding*, 535 F.2d 631, 190 USPQ 59 (CCPA 1976). To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probability or possibilities. *In re Robertson*, 169 F.3d 743, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

The Examiner provided no factual basis upon which to conclude that the Kitai arrangement *necessarily* includes the first control element (for starting to energize the display element) provided on and connected in series with a power supply line extending from a power source for supplying the electric power to the display element, as claim 11 requires.

Moreover, as one skilled in the art would realize, the Examiner's interpretation of the first control element as a part of a pixel element in the array contradicts to the arrangement recited in claim 11.

Accordingly, Kitai neither expressly nor inherently discloses the arrangement of claim 11. Claims 20 and 21 dependent from claim 11 are defined over the prior art at least for the reasons presented above in connection with claim 11.

Therefore, Applicant respectfully submits that the rejection of claims 11, 20 and 21 under 35 U.S.C. 102 as being anticipated by Kitai is untenable and should be withdrawn.

REJECTIONS UNDER 35 U.S.C. 103

Independent claim 6 recites a display device of the active matrix drive type comprising a display panel having a plurality of pixels arranged in the form of a matrix, and a scanning driver and a data driver which are connected to the display panel.

The display device is characterized in that each of the pixels of the display panel comprises:

a display element luminescent when supplied with current or voltage,

a write element to be brought into conduction when impressed with scanning voltage from the scanning driver,

voltage holding means to be impressed with data voltage from the data driver by the conduction of the write element for holding the data voltage,

a drive element for energizing or deenergizing the display element in response to the input of an on/off control signal, and

pulse-width modulation control means for on/off-controlling the drive element by pulse-width-modulating the output voltage of the voltage holding means with ramp voltage having a predetermined rate of variation.

The pulse-width modulation control means comprises an on-control element for turning on the drive element, and an off-control element for turning off the drive element.

The Examiner admits that Kitai does not disclose the claimed pulse-width modulation control means. However, he relies upon Graves for disclosing the pulse-width modulation (PWM) signal 24 for controlling the column driver.

In previous response, Applicant argued that Graves does not teach or suggest the pulse-width modulation control means having an on-control element for turning on the drive element, and an off-control element for turning off the drive element, as claim 6 requires.

In response, the Examiner contends that Kitai discloses an on-control element for turning on the drive element, and an off-control element for turning off the drive element. Therefore, the Examiner admits that the PWM circuit of Graves does not include these elements.

It is well settled that the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art. *Cable Electric Products, Inc. v. Genmark, Inc.*, 770 F.2d 1015, 226 USPQ 881 (Fed. Cir. 1985). In determining whether a case of prima facie obviousness exists, it is necessary to ascertain whether the prior art teachings appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification. *In re Lulu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984).

As the Examiner admits, Graves does not disclose the pulse-width modulation control means having an on-control element for turning on the drive element, and an off-control element for turning off the drive element, as claim 6 requires.

Kitai also does not disclose that an on-control element for turning on the drive element, and an off-control element for turning off the drive element operate in the pulse-width modulation control means for on/off-controlling the drive element by pulse-width-modulating the output voltage of the voltage holding means with ramp voltage having a predetermined rate of variation, as claim 6 recites.

Therefore, the combined teachings of the reference would not teach or suggest the arrangement of claim 6. Accordingly, the Examiner's conclusion of obviousness is unwarranted.

Independent claim 28 recites a display device of the active matrix drive type comprising a display panel having a plurality of pixels arranged in the form of a matrix, each of the pixels of the display panel having a display element luminescent when supplied with electric power, and

a control circuit for controlling the luminescence period of the display element within 1 frame period in accordance with data voltage to be supplied from outside.

The display device is characterized in that the control circuit of each pixel of the display panel has

a write transistor to be brought into conduction when impressed with scanning voltage,

a capacitor to be impressed with data voltage by the conduction of the write transistor for holding the data voltage, and

a drive transistor provided on and connected in series with a power supply line for supplying the electric power to the display element and to be brought into conduction upon the difference between the voltage to be applied to a gate thereof and the voltage at one terminal of the display element exceeding a predetermined threshold value, and

that a voltage in accordance with the sum of ramp voltage having a predetermined rate of variation and the output voltage of the capacitor is applied to the gate of the drive transistor.

The Examiner considers the switching medium 34 of Kitai to correspond to the claimed capacitor. However, he admits that Kitai does not disclose that a voltage in accordance with the sum of ramp voltage having a predetermined rate of variation and the output voltage of the capacitor is applied to the gate of the drive transistor.

Graves is relied upon for disclosing a PWM signal.

In previous response, Applicant argued that the combined teachings of Kitai with Graves do not teach or suggest supplying the drive transistor with the sum of ram voltage and the output voltage of the capacitor, as claim 28 requires.

The Examiner's answer is presented on pages 7 and 8 of the Office Action. It seems that the Examiner's conclusion of obviousness is based on his assertion that "application of voltage to the gate of transistor is well known."

In response, Applicant respectfully submits that application of a voltage to a gate would not suggest that a voltage in accordance with the sum of ramp voltage having a predetermined rate of variation and the output voltage of the capacitor is applied to the gate of the drive transistor.

It is noted that Graves does not disclose application of such a voltage to any drive transistor.

Kitai also does not disclose such an arrangement.

Hence, the combined teachings of the applied references are not sufficient to arrive at the arrangement, in which a voltage in accordance with the sum of ramp voltage having a predetermined rate of variation and the output voltage of the capacitor is applied to the gate of the drive transistor, as claim 28 requires.

Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 28.

Dependent claims 8, 12-19 and 22-27 are defined over the prior art at least for the reasons presented above in connection with the respective independent claims.

Entry of the amendments of claims under 37 CFR § 1.116 is respectfully requested because the amendments are limited to cancellation of the rejected claims.

In view of the foregoing, and in summary, claims 6-8 and 11-28 are considered to be in condition for allowance. Favorable reconsideration of this application, as amended, is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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